DEPARTMENT OF ENVIRONMENTAL QUALITY
PERMITTING and COMPLIANCE DIVISION
MONTANA POLLUTANT DISCHARGE ELIMINATION SYSTEM (MPDES)

Statement of Basis

PERMITTEE:	Seaboard Foods, LP
PERMIT NUMBER:	MT0000094
RECEIVING WATER:	Clark Fork River
FACILITY INFORMATION:	
Name:	Daily's Premium Meats-Missoula
Location:	2900 Mullan Road Missoula, MT 59808
Mailing Address:	2900 Mullan Road Missoula, MT 59808
Contact:	Mark Wilson, President – Processed Meats Division
Telephone:	(406) 721-7007
FEE INFORMATION:	
Number of Outfalls:	1 (for fee determination purposes)
Type of Outfall:	001 – Minor Industrial Non-Contact Cooling Water Discharge to Surface Water

I. Permit Status

Seaboard Foods, LP operates the former John R. Daily's bacon processing plant in Missoula under the state of Montana registered business Daily's Premium Meats-Missoula (DPM). The DPM facility was initially permitted by the Department in 1975, when it was a slaughterhouse, rendering facility, and meat processor with anaerobic and aerobic treatment lagoons discharging process water and non-contact cooling water to the Clark Fork River.

The existing MPDES permit for the DPM discharges from the wastewater treatment system became effective on December 1, 1992, and expired at midnight, September 30, 1997. On March 14, 1997 the Department of Environmental Quality (Department) received the fee and a completed application Form 2C for the renewal of MPDES permit MT0000094 for discharges from Outfalls 001 and 002. In accordance with ARM 17.30.1313, the permit was administratively extended at that time.

Supplemental information was provided at the request of the Department in September 2000 and February, March, and May of 2002. In August 2005, due to changes in ownership and the cessation of discharge via Outfall 002, the permittee provided updated renewal application Forms DEQ-1 and 2C for discharge to the Clark Fork River via Outfall 001 only.

II. Facility Information

a) Facility Description

Daily's Premium Meats-Missoula (DPM) is a privately-owned meat processing facility that produces approximately 85,000 pounds of bacon per day and 420,000 pounds of bacon per week from raw pork bellies (supplemental application information, May 2002). Bacon is the only product. Trimmings and other byproducts are sold to other processors. DPM is a categorical industry with Standard Industrial Classification (SIC code) number 2013 – "Sausage and Other Prepared Meats" according to the 1987 Office of Management and Budget Standard Industrial Classification Manual. DPM meets the criteria for definition as a facility whose discharge is subject to the Effluent Limitation Guidelines under the Meat and Poultry Products Point Source Category Subpart G. Sausage and Luncheon Meats Processors (40 CFR 432.70, *et seq.)*.

The existing permit limited discharges from the anaerobic/aerobic lagoon system overflow (internal compliance point Outfall 002) and the combined lagoon system and non-contact cooling water (NCCW) discharges to the Clark Fork River (Outfall 001). The combined effluent was discharged at Outfall 001 from an effluent weir box situated on the north river bank approximately five feet above the river level.

As of July 1, 2005, DPM has ceased the discharge of all wastewaters to and from the treatment lagoon system (Letter, HDR Engineering, October 14, 2005 and Department inspection November 14, 2005). All domestic and process wastewaters are discharged to the City of Missoula (City) Publicly-Owned Treatment Works (POTW) via the City sewer lines. Since August 2005, the treatment lagoons have been drained. By August 2006, sludge had been removed and land applied according to regulations. The former treatment lagoons have been restored to a natural condition.

Effectively, Outfall 002 has been removed and the nature and volume of the discharge from Outfall 001 has been altered.

Discharge to the Clark Fork River from this facility now consists solely of once-through NCCW via the effluent weir box at Outfall 001. According to the schematic provided with the renewal application, water used at DPM is drawn from a common header for the two public water supply wells (PWSID 0000825) on site. This water serves as the domestic supply for employees, wash down and process waters, and condenser once-through NCCW (see Figure 1). There are no additives used for NCCW. The 1992 permit was developed for a maximum NCCW flow of 0.217 million gallons per day (mgd). The application specified an NCCW flow of 0.18 mgd.

b) Effluent Characteristics

Effluent water quality data applicable to the current discharge were obtained from DPM Discharge Monitoring Reports (DMR) for the period of record (POR) July 2005 through December 2006. This is the period of time during which NCCW was the sole component making up the discharge from Outfall 001.

Table 1. DMR Effluent Characteristics, NCCW Only, POR July 2005 through December 2006.

Parameter	Units	Number of Samples	30-Day Average	Daily Minimum	Daily Maximum	Previous Permit Limit
Flow	mgd	18	0.0619	0.045	0.139	none
pH (median value)	s.u.	18	7.1	7.0	8.0	6.0 to 9.0
Temperature	°F	18	77.7	72.6	82.4	none

c) Compliance History

The previous permit limited: pH to the range 6.0 to 9.0 s.u., fecal coliform bacteria numbers to 400 organisms per 100 mL, and total residual chlorine concentrations at 0.5 mg/L in the effluent discharged at Outfall 001. According to review of the DMRs over the POR, permit limits at Outfall 001 have not been exceeded since July of 2005.

III. Proposed Technology-Based Effluent Limits (TBELs)

a) Applicability

The Board of Environmental Review (Board) has adopted General Treatment Requirements that establish the degree of wastewater treatment required to maintain and restore the quality of state surface waters [ARM 17.30.635(1)]. This rule states that, in addition to federal Effluent Limitation Guidelines (ELGs), the degree of wastewater treatment required is based on the surface water quality standards; the state's nondegradation policy; the quality and flow of the receiving water; the quantity and quality of sewage, industrial wastes and other wastes to be treated; and the presence or absence of other sources of pollution in the watershed.

Federal ELGs established for discharges from facilities under the Meat and Poultry Products Point Source Category Subpart G. Sausage and Luncheon Meats Processors (40 CFR 432.70, *et seq.)* were implemented in the 1992-issued permit for Outfall 002, the overflow discharge of process wastewater from the treatment lagoons. DPM is now defined as an indirect discharger, as per 40 CFR 403.3(g), sending all process wastewaters to the POTW for treatment, which eliminates these process wastewaters from the overall discharge to the receiving water at Outfall 001.

According to 40 CFR 401.11(n), NCCW are those waters that are used for cooling which do not come into direct contact with any raw material, intermediate product, waste product or finished product. Cooling at DPM is accomplished using a once-through system with no chemical additives. Once-through NCCW exhibit negligible changes in water quality (EPA Document 68-01-2294, October 1974). They typically do not contain pollutants, other than heat, except during abnormal conditions, such as line breaks or inadvertent spills.

Because all DPM process wastewaters are routed to the POTW, the US EPA and the City of Missoula Industrial Pretreatment Program are responsible for compliance with local limits and the remaining discharge to the river is not subject to federal ELGs. And, because the DPM discharge at Outfall 001 consists solely of NCCW and federal ELGs have not been established for non-contact cooling water, there are no TBELs proposed for this permit cycle.

b) Nondegradation Allocated Loads

Under ARM 17.30.702(3) & (18), discharges from this facility are considered to be existing sources that will not result in new or increased discharge, because they represent activities that were approved or permitted prior to April 29, 1993 and the discharge flows have decreased.

IV. Water-Quality-Based Effluent Limits

Permits are required to include water quality based effluent limits (WQBEL) when technology based effluent limits are not adequate to protect state water quality standards (40 CFR 122.44 and ARM 17.30.1344). ARM 17.30.637(2) states that no wastes may be discharged that can reasonably be expected to violate any state water quality standards. Montana water quality standards (ARM 17.30.601 *et seq*.) define both water use classifications for all state waters and numeric and narrative standards that protect those designated uses. New or increased sources, as defined in ARM 17.30.702(18), are subject to Montana Nondegradation Policy, stated in 75-5-303, Montana Code Annotated (MCA), and regulations in ARM 17.30.701-718.

The Montana Water Quality Act (Act) states that a permit may only be issued if the Department finds that the issuance or continuance of the permit will not result in pollution of any state waters (75-5-401(2), MCA). Montana water quality standards in ARM 17.30.637(2) require that no wastes may be discharged such that the waste either alone or in combination with other wastes will violate or can reasonably be expected to violate any standard. ARM 17.30.1344(1) adopts by reference 40 CFR 122.44 which states that MPDES permits shall include limits on all pollutants which will cause, or have a reasonable potential to cause an excursion of any water quality standard, including narrative standards.

The Act authorizes the issuance of point source discharge permits on a listed water body pending completion of a TMDL provided that: 1) the discharge is in compliance with the provisions of 75-5-303 (Nondegradation Policy), MCA; 2) the discharge will not cause a decline in water quality for the parameters for which the water body is listed; and, 3) the minimum treatment requirements under 75-5-703(10), MCA are met.

The purpose of this section is to provide a basis and rationale for establishing effluent limits based on Montana water quality standards that will protect designated uses of the receiving water.

a) Receiving Water

The DPM discharge of NCCW is to the Clark Fork River drainage basin identified as USGS Hydrologic Unit Code (HUC) 17010204, Middle Clark Fork River. The specific segment is MT76M001_020 and is described as the "Clark Fork River from Fish Creek to Rattlesnake Creek".

The Clark Fork River in the area of the DPM discharge is listed as impaired on Montana's 1996 and 2006 303(d) lists. The 1996 list shows the Clark Fork River to be partially supportive of aquatic life support, cold-water fishes-trout, and recreation (swimming). The probable causes of impairment are listed as metals, nutrients, organic enrichment/DO, and taste and odor. The probable sources of these causes are listed as dam construction, municipal and industrial point sources, land disposal, resource extraction, and urban runoff/storm sewers.

The 2006 303(d) list indicates the river partially supports aquatic life, cold-water fishes, and recreation. It is listed as fully supporting agriculture and industrial uses. Probable causes of impairment are listed as metals, organic enrichment/low DO, nutrients, phosphorus and algae growth/chlorophyll *a*. Probable sources include mill tailings, municipal and industrial point sources, and resource extraction.

The Clark Fork River in the area of the DPM discharge at Outfall 001 is classified as "B-1" according to the Montana Surface Water Quality Standards and Procedures [ARM 17.30.607(1)(a)]. Class B-1 waters are to be maintained suitable for drinking, culinary and food processing purposes, after conventional treatment; bathing, swimming and recreation; growth and propagation of salmonid fishes and associated aquatic life, waterfowl and furbearers; and agricultural and industrial water supply [ARM 17.30.623(1)].

Pursuant to ARM 17.30.623(2) discharges to B-1 waters may not violate the specific water quality standards listed under ARM 17.30.623(2)(a through k). In addition, discharges are subject to ARM 17.30.635, 636, 637, 641, 645, and 646. For the purposes of nondegradation, the existing facility is not an increased source as defined in ARM, 17.30.702(18).

According to the Montana Fish, Wildlife, and Parks Department (FWP) Montana Fisheries Information System (February 2007), the Clark Fork River in the area of Missoula supports cold and warm water fisheries that include: brook, brown, bull, rainbow, and Westslope cutthroat trout, largemouth bass, long-nose dace, largescale and longnose suckers, mountain whitefish, northern pike and northern pike minnow, pumpkinseed, redside shiner, and yellow perch. Any combination of

these species' early life stages can be present in the receiving waters at any time of the year according to the table from FWP, Spawning Times of Montana Fishes (D. Skaar, March 2001).

USGS gauging station 12340500, Clark Fork River at Missoula is approximately 5 miles above the discharge at Outfall 001. The critical low flow value, the seven-day, ten-year low flow condition (7Q10) for the receiving water is 574 cfs (371 mgd). The 7Q10 values were obtained from the USGS Report 2004-5266, Statistical Summaries of Streamflow in Montana and Adjacent Areas, Water Years 1900 through 2002.

Ambient water quality data for the Clark Fork River in the area of the DPM discharge were obtained from USGS gauging station 12340500 1998 through 2004 and the City of Missoula WWTP DMRs for the Tri-State Water Quality Council monitoring point RIV A, the Clark Fork River above Missoula September 1998 through September 2003. A summary of the data is presented below.

Clark Fork River Above Missoula Ambient Water Quality Monitoring Data

Parameter	Units	Number of Samples	Average Value	Minimum Value	Maximum Value
Total Ammonia as N	mg/L	74	0.028	<0.010	0.345
Total Nitrogen	mg/L	140	0.251	<0.052	1.32
Total Phosphorus as P	mg/L	140	0.033	0.006	0.214
pH (s.u.), median value	s.u.	166	8.18	6.67	8.89
Temperature, Summer (1)	(°F)	94	60.6	47.3	73.6
Temperature, Winter (2)	(°F)	74	45.3	32.4	59.7

Footnotes:
(1) Summer period is taken to be June 1 through September 30.
(2) Winter period is taken to be October 1 through May 31.

b) Mixing Zone

Montana Water Quality Standards require receiving waters to be free from substances that will cause toxic or harmful conditions to human, animal, plant, or aquatic life [ARM 17.30.637(1)(d)]. Although certain standards may be exceeded in the mixing zone, an effluent in its mixing zone may not block passage of aquatic organisms nor may it cause acutely toxic conditions [ARM 17.30.602(16)]. No mixing zone will be granted that will impair beneficial uses [ARM 17.30.506(1)]. And, acute standards may not be exceeded in any part of the mixing zone [ARM 17.30.507(1)(b)].

The Department must determine the applicability of currently granted mixing zones [ARM 17.30.505(1)]. This determination is made during permit development through the evaluation of available site-specific data. The 1992-developed permit did not define a mixing zone for this discharge. This was based on a Best Professional Judgment (BPJ) assessment determining that the dilution ratios were so great no mixing zone was necessary.

The NCCW effluent pipe from the processing plant discharges to a rectangular, sharp-crested weir box (approximately 24 in. length by 18 in. width by 12 in. depth) located on the north river bank approximately five feet above the river at 7Q10. The discharge water cascades over the rip rap on the bank, passively mixing with the river at the shore. There is no effluent diffuser. The river is 192 feet wide at 7Q10 at the point of discharge. Less than 50 feet downstream of the discharge location, the river is divided by an island that extends downstream approximately 300 feet.

DPM has a mean annual discharge over the POR for NCCW only of 0.0619 mgd. The annual 7Q10 for the receiving water is 371 mgd. The resultant dilution ratio (defined as the 7Q10 flow of the stream segment without the discharge, divided by the mean annual flow of the discharge [ARM 17.30.516(3)(a)]) is 5,994. As a facility that discharges a mean annual flow of less than 1.0 mgd to a stream segment with a dilution ratio greater than 100:1, a standard mixing zone is appropriate for this discharge and the full 7Q10 flow could be used as the dilution flow to develop effluent limitations [ARM 17.30.516(3)(a)].

The length of a standard mixing zone must not exceed more than one-half the mixing width calculation or extend downstream from the point of discharge more than ten stream widths at 7Q10, whichever is more restrictive [ARM 17.30.516(4)]. Ten times the river width at 7Q10 is 1,920 feet.

The permittee submitted a mixing zone study to the Department for temperature in Outfall 001 (Technical Memorandum, HDR Engineering, Inc., October 2006). The memorandum uses the one-half mixing width distance calculation and measurements of stream morphology to calculate the length of the mixing zone at 611 ft. This result was compared with the standard mixing zone length of 1,920 ft. The chronic mixing zone for temperature will be set at 611 feet downstream of the outfall location. Due to incomplete (passive) mixing of the effluent with the receiving water, no acute mixing zone will be granted.

The river segment at the discharge location is separated from the main river by an island that extends downstream of the discharge for approximately 300 feet. As a result of this configuration, the HDR Technical Memorandum concluded that only 4.6% of the river flow at 7Q10 is available for mixing. This is calculated to be 17.1 mgd. This more restrictive dilution flow value of 17.1 mgd will be used for calculations requiring an instream 7Q10 flow value.

c) Applicable Water Quality Standards

Pursuant to ARM 17.30.623(2) discharges to B-1 waters may not violate the specific water quality standards listed under ARM 17.30.623(2)(a through k). In addition, discharges are subject to ARM 17.30.635, 636, 637, 641, 645, and 646. Numeric nutrient water quality standards for the mainstem of the Clark Fork River from the confluence with the Blackfoot River (N46°52’19”, W113°53’35”) to the confluence with the Flathead River (N 47°21’45”, W 114°46’43”) are presented in ARM 17.30.631(2)(b).

c) Basis for Proposed Water Quality-Based Effluent Limitations (WQBELs)

Permits are required to include WQBELs when technology-based effluent limits are not adequate to protect water quality standards (40 CFR 122.44, ARM 17.30.1344). ARM 17.30.637(2) states that

no wastes may be discharged that can reasonably be expected to violate any standard. ARM 17.30.1345 requires WQBELs to be developed for any pollutant for which there is reasonable potential (RP) for discharges to cause or contribute to exceedences of instream water quality standards. When any of the RP evaluations show that the receiving water concentration(s) exceed(s) the standard, RP is determined to exist, and an effluent limit must be included in the permit.

***Escherichia coli* (*E. coli*) Bacteria:** Surface water quality standards (ARM 17.30.623(2)(a)) define limits for discharges of coliform bacteria to class B-1 state waters. The source water for DPM NCCW is the DPM-owned public water supply wells (PWSID 0000825). Routine sampling of these wells has shown that bacteria are not of concern with this permit renewal and a limit is unnecessary (DEQ SWDAR, June 2004).

Temperature: In past permit cycles, there was no permit limitation for temperature on discharges to the river at Outfall 001. The discharge was a combination of NCCW and the overflow from the lagoon system. Water temperatures of this combined flow averaged 68.5 °F. Since July of 2005, the NCCW flow alone has an average temperature of 77.7 °F. Due to the higher temperature of the effluent, a limit for temperature must be considered.

Under the B-1 classification specific water quality standards (ARM 17.30.623(e), "A 1 ºF maximum increase above naturally occurring water temperature is allowed within the range of 32 ºF to 66 ºF; within the naturally occurring range of 66 ºF to 66.5 ºF, no discharge is allowed which will cause the water temperature to exceed 67 ºF; and where the naturally occurring water temperature is 66.5 ºF or greater, the maximum allowable increase in water temperature is 0.5 ºF. A 2 ºF per-hour maximum decrease below naturally occurring water temperature is allowed when the water temperature is above 55 ºF. A 2 ºF maximum decrease below naturally occurring water temperature is allowed within the range of 55 ºF to 32 ºF…"

To adequately assess the effect of temperature in the discharge an RP determination was performed for the summer and winter conditions, using the B-1 temperature standard, the 4.6% of 7Q10 flow value, ambient river temperatures, and discharge temperatures from the DMRs.

For the purposes of this RP determination, the ambient winter temperature was taken to be the minimum reported in the data set, 32.4 °F. The standard therefore requires that the winter receiving water temperature must remain below 33.4 °F at the end of the mixing zone. For the summer condition, ambient temperature was taken to be the 95th percentile of the reported data set, 69.8 °F. The standard therefore requires that the summer receiving water temperature can not exceed 70.3 °F at the end of the mixing zone.

RP was completed using the mass balance equation (*Equation 1*):

$$C_r = \frac{Q_e C_e + Q_s C_s}{Q_r} \qquad \textit{Equation 1}$$

Where, for winter conditions:

C_r = downstream receiving water temperature (°F)
C_e = effluent temperature, 95th percentile, 82.1 ° F
Q_e = effluent discharge flow rate, 0.18 mgd
Q_s = receiving water flow, 4.6% of 7Q10, 17.1 mgd
C_s = ambient water temperature, minimum reported, 32.4 °F
$Q_r = Q_e + Q_s$

And where, for summer conditions:

C_r = downstream receiving water temperature (°F)
C_e = effluent temperature, 95th percentile, 82.1 ° F
Q_e = effluent discharge flow rate, 0.18 mgd
Q_s = receiving water flow, 4.6% of 7Q10, 17.1 mgd
C_s = ambient water temperature, 95th percentile, 69.8 °F
$Q_r = Q_e + Q_s$

For winter, the resultant receiving water temperature is 32.9 °F; this is a net change of 0.5 °F, below the allowable 1 °F change. For summer, the resultant receiving water temperature is 69.9 °F; this is a net change of 0.1 °F, below the allowable 0.5 °F change. As a result, no chronic limitation for temperature is required.

To assure this condition is maintained, a limit on maximum effluent flow will be implemented; discharge flow from Outfall 001 cannot exceed 0.180 mgd. The permittee will be required to install continuous flow monitoring capabilities that will go into effect with the final limitations.

No discharge can cause or create acutely toxic conditions in its mixing zone, nor may it block passage of aquatic organisms [ARM 17.30.602(16)]. Rapid temperature changes can be attributed to unique human activities, such as cooling water discharges (Hicks, 2002). A localized point source of temperature change is capable of creating short-term lethality to aquatic life because discharged water temperature may be significantly higher than ambient water to which organisms are acclimated (Bell, 1986 and Hicks, 2002). Temperature limits must protect against localized shifts in daily maximum temperatures. Therefore, the discharge will be limited to a maximum allowable temperature.

A review of professional resources for maximum and minimum temperature tolerances of salmonid species of fish was conducted. The Clark Fork River in the area of discharge has cold water trout species present year-round; the brook, brown, and Westslope cutthroat are residents; the bull and rainbow trout are fluvial/adfluvial populations that spawn elsewhere. All trout species have early life stages present year-round. The bull and Westslope cutthroat trout species are particularly

temperature intolerant (Hicks, 2002 and Selong, *et al.,* 2001). The bull trout are regarded as having one of the lowest thermal tolerances among North American salmonids (Selong, *et al.,* 2001).

Peak daily temperatures greater than 68°F may induce stress conditions that affect trout growth rates (Hicks, 2002). For juvenile rearing, the upper lethal water temperature (where 50% of the organisms die) is 75.4 °F for brown trout [Larsen, adapted from Beschta, *et al*., 1987, 2006] and 73 °F for cutthroat trout (Bell, 1986). For rearing bull trout, temperatures greater than 57.2 °F represent a thermal barrier (Berman, 1998 and Hicks, 2002).

The optimal temperature range for brown trout is 54-66 °F and the upper limiting, near lethal water temperature is 81.0 °F (Raleigh, *et al*, 1986). Rainbow trout optimum growth temperature is identified as 55.6 °F and the 7-day ultimate upper incipient lethal temperature (UILT) range is 78.1-79.9 °F (Bear, 2005). For the Westslope cutthroat trout, optimum growth temperature is identified as 56.5 °F and the 7-day UILT is 75.4 °F. For the Bull trout, optimum growth temperature is identified as 55.8 °F and the 7-day UILT is 74.3 °F.

Typically, laboratory-derived UILT values are used to estimate acute exposure maxima. UILTs are based on 50% mortality of test organisms. It is recommended that these UILT values be adjusted by subtracting a 2 °C "safety factor" to estimate a temperature that is protective of 100% of organisms (Hicks, 2002).

A year-round daily maximum effluent temperature limitation will be applied to the effluent due to: 1) incomplete mixing at the point of discharge, 2) the prohibition of acute toxicity in the mixing zone, and 3) to protect against acute lethality from maximum temperatures. The proposed maximum daily temperature limit is 70 °F; this is the lowest reported upper lethal water temperature for the rearing of juvenile cutthroat trout, minus 2 °C.

Currently, the NCCW discharge temperature exceeds the proposed limitation. Interim limitations allowing the permittee time to meet the final limitations will be incorporated into this permit cycle. The permittee will be required to install continuous temperature monitoring capabilities that will go into effect with the final limitations.

Nutrients - Total Nitrogen (TN) and Total Phosphorus as P (TP): ARM 17.30.631(2)(b) states the numeric nutrient water quality standards for the mainstem of the Clark Fork River from the confluence with the Blackfoot River (N46°52'19", W113°53'35") to the confluence with the Flathead River (N 47°21'45", W 114°46'43"). From June 21 to September 21 the Total Nitrogen and Total Phosphorus and benthic algal chlorophyll *a* numeric water quality standards are as follows:

Parameter	Concentration
Total Phosphorus as P	39 µg/L (0.039 mg/L)
Total Nitrogen as N	300 µg/L (0.300 mg/L)
(Summer mean) benthic algal chlorophyll *a*	100 mg/square meter
(Maximum) benthic algal chlorophyll *a*	150 mg/square meter

Currently, the ambient water quality for nutrients in the Clark Fork River, in the area of the Missoula discharge, is below the numeric water quality standards for nutrients. The mean Total Nitrogen concentration for the growth season June through September is 0.231 mg/L as compared to the standard of 0.300 mg/L and an average of 0.0282 mg/L for Total Phosphorus versus the standard of 0.039 mg/L.

In October of 1998, the EPA approved the total nitrogen (TN) and total phosphorus (TP) Total Maximum Daily Load (TMDL) for the Clark Fork River. The DPM discharge does not have a TMDL-defined WLA for TN and TP.

Data are not available to fully characterize the nitrogen and phosphorus concentrations or total load associated with the NCCW discharge at this facility. Non-contact cooling water is drawn from public water supply wells, PWSID 00000825, and is untreated prior to use. Only nitrate nitrogen values have been monitored on a regular basis for these PWS wells. The long term average concentration of nitrate plus nitrite nitrogen in PWSID 00000825 (POR 1992 to 2006) is 0.63 mg/L. The minimum and maximum reported values are 0.34 and 0.9 mg/L, respectively. To allow for assessment of TN and TP load in the next permit renewal, quarterly monitoring of the effluent for TN and TP will be implemented during this permit cycle.

Dissolved Oxygen (DO): DO standards are characterized by the type of fishery (cold- or warm-water) and by the presence or absence of fish in early life stages (DEQ Circular DEQ7, February 2006). They are presented in the table below. Standards are further defined based on a specific period of time and required in-stream DO levels. This waterbody is classified as supporting cold-water fisheries (salmonids) and all life stages are assumed to be present year-round as discussed above. The receiving water is listed as impaired due to low DO.

Outfall 001 Dissolved Oxygen (DO) Standards

Dissolved Oxygen (mg/L)	For Waters Classified A-1, B-1, B-2, C-1, and C-2			
	30-Day Mean	7-Day Mean	7-Day Mean Minimum (1)	1-Day Minimum (1)
Early Life Stages (2, 3)	NA	9.5 (6.5)	NA	8.0 (5.0)
Other Life Stages	6.5	NA	5.0	4.0

Footnotes:
(1) All minima should be considered as instantaneous concentrations to be achieved at all times.
(2) These are water column concentrations recommended to achieve the required inter-gravel DO concentrations shown in parentheses. For species that have early life stages exposed directly to the water column, the figures in parentheses apply.
(3) Includes all embryonic and larval stages and all juvenile forms of fish to 30-days following hatching.

DO has not been monitored at this facility in the NCCW in the past. The NCCW source is groundwater and the water is heated in the process of use. DO solubility decreases as water temperature increases, therefore, DO may be depleted in the effluent. A requirement to monitor DO on a weekly basis will be included in this permit cycle.

Total Recoverable Metals: The middle Clark Fork River from Fish Creek to Rattlesnake Creek is included in both the 1996 and 2006 303(d) lists as impaired due to metals. The 2006 use assessment specifically lists arsenic, cadmium, and copper as the metals of concern. The EPA Developmental Document for Non-contact Cooling Waters (EPA Developmental Document 68-01-2294, October 1974) indicates metals can be a concern if cooling systems are cleaned or flushed with chemical corrosion inhibitors, algaecides, and other cleaners. However, the DPM facility has not used chemicals in the NCCW in the past and there is no reason to anticipate their use in the future.

Monitoring for total recoverable metals in the effluent was performed once in June of 2005 for the renewal application update. There is a lack of information available to perform an RP assessment. Therefore, monitoring for these parameters (specifically total recoverable arsenic, cadmium, and copper) to complete a renewal application will be implemented with this permit cycle. The facility will monitor for As, Cd, and Cu semi-annually during the third full and fourth full calendar years of the permit cycle.

Total Residual Chlorine (TRC) – The PWSID well water is not chlorinated prior to use and the facility does not utilize chemical additives in the NCCW; therefore no limit will be established for TRC.

pH - Pursuant to ARM17.30.623 (2)(c), induced changes in the hydrogen ion concentration within the range of 6.5 to 8.5 must be less than 0.5 s.u. Natural pH outside this range must be maintained without change. And, natural pH above 7.0 must be maintained above 7.0.

d) Proposed WQBELs for Outfall 001

Information in the application states that chemical additives are not used to control algae/biofilm, corrosion, or scale in the non-contact cooling water. The use of chemical additives including oxidizers is not authorized in this permit due to their inherent toxicity to aquatic life.

V. Interim and Final Effluent Limits

Outfall 001

Interim Limitations

The following interim effluent limitations will be applied to the discharge at Outfall 001, immediately upon the effective date of the permit and remain in effect until midnight December 31, 2009.

Parameter	Units	Average Monthly Limit (1)	Average Weekly Limit (1)	Maximum Daily Limit (1)
Flow	MGD	NA	NA	0.180 (2)

Footnotes: NA means not applicable
(1) See Definitions section at end of permit for explanation of terms.
(2) Instantaneous flow measurement.

No use of chemical additives in the NCCW is allowed.

pH: Effluent pH from Outfall 001 shall remain between 6.0 and 9.0 standard units (instantaneous minimum and instantaneous maximum). For compliance purposes, any single analysis or measurement beyond this limitation shall be considered a violation of the conditions of this permit.

There shall be no discharge of floating solids or visible foam in other than trace amounts.

There shall be no discharge which causes visible oil sheen in the receiving stream.

Final Limitations

The following final effluent limitations will be applied to the discharge at Outfall 001, effective January 1, 2010 and remain in effect for the duration of the permit cycle.

Parameter	Units	Average Monthly Limit (1)	Average Weekly Limit (1)	Maximum Daily Limit (1)
Flow	MGD	NA	NA	0.180 (2)
Temperature	°F	NA	NA	70

Footnotes: NA means not applicable
(1) See Definitions section at end of permit for explanation of terms.
(2) Continuous flow measurement.

No use of chemical additives in the NCCW is allowed.

pH: Effluent pH from Outfall 001 shall remain between 6.0 and 9.0 standard units (instantaneous minimum and instantaneous maximum). For compliance purposes, any single analysis or measurement beyond this limitation shall be considered a violation of the conditions of this permit.

There shall be no discharge of floating solids or visible foam in other than trace amounts.

There shall be no discharge which causes visible oil sheen in the receiving stream.

VI. Self-Monitoring Requirements

The Developmental Document for Non-contact Cooling Waters (EPA Developmental Document 68-01-2294, October 1974) identifies pH, temperature, and residual chlorine as pollutants of concern to be regularly monitored on a once-through cooling system. pH is used as an indicator for other problems such as leaks into the coolant system. Residual chlorine monitoring applies only when chlorination is used as a method of disinfection. The source water for NCCW at DPM is not chlorinated during use at the facility. Periodic monitoring for metals is suggested when cleaning of the condenser(s) occurs (EPA Developmental Document 68-01-2294, October 1974).

Effluent monitoring requirements for DPM are presented herein. Self-monitoring of effluent discharged from the NCCW system at Outfall 001shall be conducted at the discharge structure and samples shall reflect the volume and nature of the discharge.

Outfall 001 Monitoring Requirements

Parameter	Unit	Sample Location	Sample Frequency	Sample Type (1)
Flow	mgd	Effluent	Daily	Instantaneous
Flow (2)	mgd	Effluent	Continuous	(3)
pH	s.u.	Effluent	Daily	Instantaneous
Temperature	°F	Effluent	Daily	Instantaneous
Temperature (2)	°F	Effluent	Continuous	(4)
Nitrate + Nitrite as N	mg/L	Effluent	1/Quarter	Grab
Total Kjeldahl Nitrogen	mg/L	Effluent	1/Quarter	Grab
Total Nitrogen as N (6)	mg/L	Effluent	1/Quarter	Calculated
	lb/day	Effluent	1/Quarter	Calculated
Total Phosphorus as P	mg/L	Effluent	1/Quarter	Grab
	lb/day	Effluent	1/Quarter	Calculated
Dissolved Oxygen	mg/L	Effluent	1/Week	Instantaneous

Footnotes: NA
(1) See Definitions section at end of permit for explanation of terms.
(2) Final flow and temperature measuring and monitoring requirements effective January 1, 2010.
(3) Requires recording device or totalizer; permittee shall report daily maximum and 30-day average flow on DMR
(4) Requires temperature recording or logging device; permittee shall report daily maximum and 30-day average flow on DMR
(5) Calculated as the sum of Nitrate + Nitrite as N and Total Kjeldahl Nitrogen concentrations.

Outfall 001 Additional Monitoring Requirements					
Parameter	Unit	Sample Location	Sample Frequency	Sample Type (1)	ML (2)
Arsenic, Total Recoverable (3)	µg/L	Effluent	2/year (4)	Grab	1
Cadmium, Total Recoverable (3)	µg/L	Effluent	2/year (4)	Grab	0.1
Copper, Total Recoverable (3)	µg/L	Effluent	2/year (4)	Grab	1

Footnotes:
(1) See Definition section at end of permit for explanation of terms.
(2) ML means minimum reporting level.
(3) Metals shall be analyzed as total recoverable, use EPA Method (Section) 4.1.4 [EPA 600/4-79-020, March 1983] or equivalent.
(4) Sampling for these parameters required in third and fourth full calendar years of permit cycle only.

Reporting Requirements

All analytical procedures must comply with the specifications of 40 CFR Part 136 and the RRVs specified in Circular DEQ-7 (February 2006). All records must be kept in accordance with the permit specifications.

Average Monthly Limit (AML)

The AML or 30-day average is the Arithmetic Average or mean (except for *E. coli* bacteria) of all of the Daily Discharge samples collected during a calendar month, as defined in Part V of the permit. If only one sample is collected then it is considered the 30-day average and reported on the Discharge Monitoring Report.

Average Weekly Limit (AWL)

The AWL or 7-day average is the Arithmetic Average or mean (except for *E. coli* bacteria) of all of the Daily Discharge samples collected during a calendar week, as defined in Part V of the permit. If only one sample is collected during the calendar week it is considered the 7-day average. The highest 7-day average of the monitoring period shall be reported on the 7-day average blank on the Discharge Monitoring Report. In cases where only one sample is collected during the entire monitoring period, that sample shall be reported as both the 30-day and 7-day average.

VII. Nonsignificance Determination

As discussed in the previous sections, the proposed effluent limits and discharge flows for the DPM permit do not constitute a new or increased source of pollutants pursuant to ARM 17.30.702(16). Therefore, a nonsignificance analysis is not required [ARM 17.30.705(1)].

VIII. Other Information

On September 21, 2000, a US District Judge issued an order stating that until all necessary total maximum daily loads (TMDLs) under Section 303(d) of the Clean Water Act, are established for a particular water quality limited segment, the State is not to issue any new permits or increase permitted discharges under the MPDES program. The order was issued under the lawsuit Friends of the Wild Swan vs. US EPA et al, CV 97-35-M-DWM, District of Montana, Missoula Division.

The renewal of this permit does not conflict with Judge Molloy's order because the permitted discharge does not represent a new or increased source of pollutants under nondegradation and the MPDES program.

IX. Information Sources

1. Administrative Rules of Montana Title 17 Chapter 30 - Water Quality
   a. Sub-Chapter 2 - Water Quality Permit and Application Fees, November 2003.
   b. Sub-Chapter 5 - Mixing Zones in Surface and Ground Water, November 2004.
   c. Sub-Chapter 6 - Montana Surface Water Quality Standards and Procedures, September 2004.
   d. Sub-Chapter 7- Nondegradation of Water Quality, November 2004.
   e. Sub-Chapter 10 - Montana Ground Water Pollution Control System, September 2004.
   f. Sub-Chapter 11 - Storm Water Discharges, April, 2004.
   g. Sub-Chapter 12 - Montana Pollutant Discharge Elimination System (MPDES) Standards, March 2003.
   h. Sub-Chapter 13 - Montana Pollutant Discharge Elimination System (MPDES) Permits, March 2003.

2. Bear, Elizabeth A., Effects of Temperature on Survival and Growth of Westslope Cutthroat Trout and Rainbow Trout: Implications for Conservation and Restoration, M.S. thesis, Fish and Wildlife Management, Montana State University, May 2005.

3. Bell, Milo C., Fisheries Handbook of Engineering Requirements and Biological Criteria, Fish Passage Development and Evaluation Program, US Army Corps of Engineers Chapter 11, 1986.

4. Berman, Cara, Review of the State of Oregon standard for water temperature, Appendix A., US EPA Region 10, September 1998.

5. Clean Water Act § 303(d), 33 USC 1313(d) Montana List of Waterbodies in Need of Total Maximum Daily Load Development, 1996 and 2006.
6. Federal Water Pollution Control Act (Clean Water Act), 33 U.S.C. §§ 1251-1387, October 18, 1972, as amended 1973-1983, 1987, 1988, 1990-1992, 1994, 1995 and 1996.

7. Hicks, Michael, Evaluating Standards for Protecting Aquatic Life in Washington's Surface Water Quality Standards: Temperature Criteria, Draft Discussion Paper and Literature Summary, Excerpts on the Protection of Char Provided at the Special Request of the US EPA, Water Quality Program, Washington State Department of Ecology, October 2002.

8. Larsen, Royce E., Fishery Habitat: 2) Temperature Requirements, University of California Cooperative Extension Rangeland Watershed Fact Sheet Number 27, 2006.

9. Montana Code Annotated Title 75 - Environmental Protection Chapter 5 - Water Quality, October 2002.

10. Montana Department of Environmental Quality Circular DEQ-2, Design Standards for Wastewater Facilities, September 1999.

11. Montana Department of Environmental Quality Circular DEQ-7, Montana Numeric Water Quality Standards, February 2006.

12. Montana Department of Environmental Quality Source Water Delineation and Assessment Report, John R. Daily Public Water System, PWSID # 00825, completed by Missoula City-County Health Department, Water Quality District, June 2004.

13. Montana Department of Fish Wildlife and Parks D. Skaar, Spawning Times of Montana Fishes, March 2001.

14. Montana Department of Fish Wildlife and Parks Montana Fisheries Information System (MFISH) website, February 2007.

15. Montana Pollutant Discharge Elimination System (MPDES) Permit Number MT0000094:
    a. Administrative Record, archived.
    b. Renewal Application EPA Forms 1 and 2A, August 2005.
    c. Supplemental Renewal application Information, May 2002.
    d. HDR Engineering Letter, Lagoon Closure Plans, October 14, 2005.
    e. MPDES Compliance Inspection Report, November 14, 2005.
    f. Mixing Zone Technical Memorandum, HDR Engineering, Inc., October 2006, March 2007.

16. Raleigh, Robert F., *et al.,* "Habitat Suitability Index Models and Instream Flow Suitability Curves: Brown Trout". Biological Report 82(10.124). National Ecology Center, Division of Wildlife and Contaminant Research, Research and Development, Fish and Wildlife Service. September 1986, revised.

17. Selong, Jason H., *et al.,* Effect of Temperature on Growth and Survival of Bull Trout…, Transaction of the American Fisheries Society 130:1026-1037, 2001.

18. South Dakota State University GAP Program Fisheries Analysis for the Rainbow Trout, website: http://wfs.sdstate.edu/sdgap/fish/Fish%20hab%20affin/rainbow%20trout.pdf#search=%22rainbow%20trout%30temperature%a0preferences%22, accessed August 2006.

19. Tri-State Implementation Council, Clark Fork River Voluntary Nutrient Reduction Plan, August 1998.

20. Tri-State Water Quality Council, Water Quality Status and Trends in the Clark Fork-Pend Oreille Watershed, *Trends Analysis from 1984 – 2002*, April 2004.

21. Tri-State Water Quality Council 2000-2005 Summary Monitoring Reports, prepared by Land & Water Consulting, June 2006.

22. US Code of Federal Regulations, 40 CFR Parts 122-125, 130-133, & 136.

23. US Code of Federal Regulations, 40 CFR Part 403 – General Pretreatment Regulations for Existing and New Sources of Pollution.

24. US Code of Federal Regulations, 40 CFR Subchapter N Part 432.70, *et seq.* Meat and Poultry Products Point Source Category Subpart G Sausage and Luncheon Meats Processors.

25. US Department of the Interior US Geological Survey, Statistical Summaries of Streamflow in Montana and Adjacent Areas, Water Years 1900 through 2002, Scientific Investigations Report 2004-5266, 2004.

26. US EPA Developmental Document for Effluent Limitations Guidelines and Standards of Performance Steam Supply and Non-contact Cooling Water Industries, EPA 68-01-2294, October 1974.

27. US EPA Technical Support Document for Water Quality-Based Toxics Control, EPA/505/2-30-001, March 1991.

28. US EPA Region VIII Mixing Zones and Dilution Policy, December 1994, updated September 1995.

29. US EPA NPDES Permit Writers' Manual, EPA 833-B-96-003, December 1996.

30. US EPA Region VIII NPDES Whole Effluent Toxics Control Program, August 1997.

31. US EPA Ref. 8EPR-EP, Clark Fork River Total Maximum Daily Load, October 1998.

32. US EPA NPDES Permit Writers' Course Manual, EPA-833-B-91-001, April 2003.

33. US Executive Office of the President, Office of Management and Budget, Standard Industrial Classification Manual, 1987.

Completed by MK Valett – March 8, 2007/April 25, 2007

Figure 1. Flow Schematic